REMARKS

Receipt of the Office Action mailed January 28, 2003 is hereby acknowledged. Withdrawal of the prior rejections under 35 U.S.C. § 112 is noted with appreciation.

Claims 1 and 15 have been amended to recite that the melting point of the aliphatic polyester resin is from 60° to 110°C. This amendment is supported in the specification at page 4, lines 12-15. No new matter has been added. The claims have been otherwise amended to conform with more traditional U.S. phraseology.

The Examiner has rejected claims 1-15 under 35 U.S.C. § 103(a) as being unpatentable over Stewart, U.S. Patent No. 5,129,180 ("Stewart") in view of Kuratsuji, et al., U.S. Patent No. 5,939,183 ("Kuratsuji"). Stewart discloses polymeric seed coatings with increasing water permeability at increased temperatures. The Examiner has asserted that:

> "It would...have been obvious to incorporate into the film of Stewart, the additives and fillers (of Kuratsuji) in order to improve its mechanical properties, resistance to heat and chemicals, resistance to fire, etc. Even though [the] prior art does not specifically mention [the] limitations of the dependent claims, it is reasonable to assume that these limitations are inherently satisfied because [the] prior art discloses the polymers [sic] fillers and additives that are instantly claimed and used in same or similar amounts." (Office Action, p. 3)

Applicants respectfully traverse this rejection.

The criteria and Examiner's burden for making a prima facie case of obviousness in accordance with MPEP Section 706.02(j) are as follows (emphasis and numbers added):

> To establish a prima facie case of obviousness, three basic criteria must be met. (1) First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. (2) Second, there must be a reasonable expectation of success. (3) Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. <u>The teaching or suggestion to make the claimed combination and the</u>

reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. . . .

> The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." . . .

The best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references, and that that such references can be combined only if there is some suggestion or incentive to do so. In re Sang-Su Lee, 61 U.S.P.Q.2d 1430 (CAFC 2002).

Stewart discloses polymer-coated seeds where the polymers have melting points from 0° to 41°C (see, e.g., col. 8, line 53). These polymers are termed "intelligent polymers" by Stewart because they respond to changes in temperature by altering their water permeability. This allows for early planting of the seeds without the risk of premature germination. Among the polymers which might be used - according to Stewart - is polyethylene sebacate (col. 8, line 59). However, the low melting point of Stewart's polymers (no greater than 41°C), makes them unsuitable for any application as a thermoplastic polymer.

Nothing in Stewart, or the other prior art, teaches or suggests a high melting point (i.e., at least 60°C), biodegradable, water-impermeable polymer - nor articles manufactured from such a polymer - as set forth in the pending claims. In the absence of any such suggestion or teaching, the obviousness rejection must be reconsidered and withdrawn.

Moreover, the biodegradability of the claimed polymers could not have been predicted by one of skill in the art, particularly given their high melting points (at least 60°C),

high molecular weights (as reflected in their intrinsic viscosities), which are the result of the presence of numerous hydrophobic sequences which disfavor biodegradability.

CONCLUSION

In view of the foregoing, favorable action on the merits, including withdrawal of the rejections, and allowance of all the claims, is respectfully requested. If the Examiner has any questions regarding this paper, please contact one of the undersigned attorneys.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to the Commissioner for Patents, Washington, D.C. 20231, on July 28, 2003.

N. Whitney Wilson

Respectfully submitted,

By: ______________________

N. Whitney Wilson
Registration No. 38,661
BRYAN CAVE LLP
245 Park Avenue
New York, New York 10062
(212) 692-1800

Marked-Up Version of Claims

Please NOTE: Because brackets (e.g., "[ ]") are used in the claim to designate recurring polymer units, strikethrough (e.g., "~~strikethrough~~") are used to designate a deletion, while insertions are underlined (e.g., "underlined").

--1. (Currently Amended) A method of making a biodegradable article having a permeability to water vapor of less than 350 gx30μm/m^2 per day at 38°C and 90% RH comprising:

manufacturing articles from aliphatic polyester resin,

wherein said aliphatic polyester resin further comprises

a) recurring units X = [O-$(CH_2)_n$-OCO-$(CH_2)_m$-CO] and/or Y = [O-$(CH_2)_k$-CO], where the half-sum of n + m is equal to or greater than 6 and k is a number equal to or greater than 6, or by copolymers comprising units and/or sequences having the formula x_i[O-$(CH_2)_{ni}$-OCO-$(CH_2)_{mi}$-CO]; y_j[O-$(CH_2)_{kj}$-CO] where: i, j = 1-5; n_i = 2-22; m_i = 0-20; k_j = 1-21; $\sum_{i=1}^{5} x_i + \sum_{j=1}^{5} y_j = 1$ and x_i and y_j vary between 0 and 1 and are molar fractions of the various units such that $\sum_{i=1}^{5} x_i \cdot \left(\frac{n_i+m_i}{2}\right) + \sum_{j=1}^{5} y_j \cdot k_j \geq 6$,

or

b) recurring units Z=[O-(CH2)a-OCO-(CH2)b-CO] where a = 2-3, b = 7-11,

and has an intrinsic viscosity (in chloroform at 25 °C) greater than 0.7 and up to 2.5 dl/g, <u>a melting point from 60° to 110°C,</u> and a biodegradability such that, under composting conditions, a 30 µm film of said resin shows a decomposition of less than 10% in 14 days and more than 90% in six months.

--2. (Canceled)--

--3. (Currently Amended) <u>The method of claim 1,</u> ~~Use according to claim 1,~~ in which the polyester resin is produced by polycondensation of bicarboxylic aliphatic acids with from 2 to 22

carbon atoms and of diols with from 2 to 22 carbon atoms, selected in a manner such that the half-sum of the number of carbon atoms relating to the acid and to the diol is greater than 6, or by polycondensation of hydroxyl-acids, or by ring-opening of corresponding lactones or lactides having 7 to 22 carbon atoms.--

--4. (Currently amended) The method of claim 3,~~Use according to Claim 1,~~ in which the diacids and the dialcohols are obtained from renewable resources.--

--5. (Currently amended) The method of claim 1, ~~Use according to claim 1,~~ in which the polyester resin is selected from polyethylene sebacate, polybutandiol sebacate, polyhexandiol azelate, polyhexandiol sebacate, polynonandiol azelate, polynonandiol sebacate, polyoctandiol azelate, polyocatandiol brassilate, polydecandiol sebacate, and polydecandiol brassilate.--

--6. (Canceled)--

--7. (Currently amended) The method of claim1, ~~Use according to claim 1,~~ in which the polyester resin is subjected to an upgrading process.--

--8. (Currently amended) The method of claim1, ~~Use according to claim 1,~~ in which the polyester resin is a component of a blend of unmodified or modified polysaccharides.--

--9. (Currently amended) The method of claim1, ~~Use according to claim 1,~~ in which the polyester resin contains mineral or vegetable fillers and/or additives selected from lubricants,

plasticizers, colourings, flavourings, perfumes, flame-proofing agents, stabilizers with regard to hydrolysis and to thermal degradation, and antioxidants.--

--10. (Currently amended) The method of claim1, ~~Use according to claim 1~~, in which the mean numeral molecular weight of the polyester resin is between 45000 and 70000.--

--11. (Currently amended) The method of claim1, ~~Use according to claim 1,~~ wherein said articles are selected from:

- coatings which are produced by extrusion-coating, with water-vapour barrier properties, and which are usable for the packaging of fresh milk and dairy products, of meat, and of foods having high water content,
- multilayer laminates with layers of paper, plastics material and or paper/plastics material, aluminum and metalized films,
- films as such and multi-layer films with other polymer materials,
- sacks for organic refuse and for grass cuttings with periods of use longer than 1 week,
- single-layer and multi-layer food packaging comprising containers for milk, toghurt, cheeses, meat and beverages, in which the layer in contact with the food or beverage is formed by the aliphatic polyester,
- composites with gelatinized or destructured starch, and/or complexed starch or natural starch as a filler,
- mono-directional and bi-directional films,
- semi-expanded and expanded products produced by physical and/or chemical means, by extrusion, injection, or agglomeration or pre-expanded particles,

-expanded sheet and expanded containers for foods, for drugs, and for fast food.

-fibres, fabrics and non-woven fabrics in the hygiene, sanitary, and clothing fields,

-composites with mineral and vegetable fillers

-thermoformed sheets for the food or fast-food packaging fields,

-bottles for the food cosmetics and pharmaceutical fields,

-fishing nets,

-containers for fruit and vegetables,

-extruded sections usable in the fast-food field and irrigation pipes in the agricultural field.--

--12. (Currently amended) ~~Use of~~ Polyester resins as defined in claim 1 in blends with other biodegradable polymers having a permeability to water vapour greater than 300 g x 30 μm/m^2 per day at 38°C and 90% RH.

--13. (Currently amended) ~~Use of~~ Polyester resins as defined in claim 1 in blends with polylactic acid.--

--14. (Currently amended) ~~Use of~~ Polyester resins as defined in claim 1 in blends with other non-biodegradable polymers, the said polymers having a permeability to water vapour greater than 300 g x 30 μm/m^2 per day at 38°C and 90% RH.

--15. (Currently Amended) An article of manufacture comprising:

a biodegradable article having a permeability to water vapor of less than 350 gx30μm/m^2 per day at 38°C and 90% RH manufactured from aliphatic polyester resin,

wherein said aliphatic polyester resin further comprises

a) recurring units $X = [O\text{-}(CH_2)_n\text{-}OCO\text{-}(CH_2)_m\text{-}CO]$ and/or $Y = [O\text{-}(CH_2)_k\text{-}CO]$, where the half-sum of n + m is equal to or greater than 6 and k is a number equal to or greater than 6, or by copolymers comprising units and/or sequences having the formula $x_i[O\text{-}(CH_2)_{ni}\text{-}OCO\text{-}(CH_2)_{mi}\text{-}CO]$; $y_j[O\text{-}(CH_2)_{kj}\text{-}CO]$ where: i, j = 1-5; $n_i = 2\text{-}22$; $m_i = 0\text{-}20$; $k_j = 1\text{-}21$; $\sum_{i=1}^{5} x_i + \sum_{j=1}^{5} y_j = 1$ and x_i and y_j vary between 0 and 1 and are molar fractions of the various units such that $\sum_{i=1}^{5} x_i \cdot \left(\frac{n_i+m_i}{2}\right) + \sum_{j=1}^{5} y_j \cdot k_j \geq 6$,

or

b) recurring units Z=[O-(CH2)a-OCO-(CH2)b-CO] where a = 2-3, b = 7-11, and has an intrinsic viscosity (in chloroform at 25 °C) greater than 0.7 and up to 2.5 dl/g, and a biodegradability such that, under composting conditions, a 30 μm film of said resin shows a decomposition of less than 10% in 14 days and more than 90% in six months.--